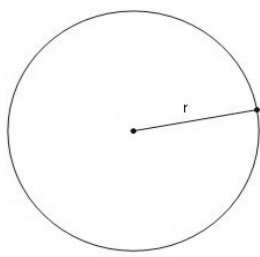
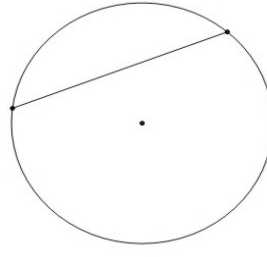


## 11.1 – Parts of a Circle

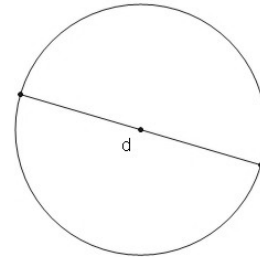
**Circle** – the set of all points in a plane that are a given distance from a given point in the plane, called the center of the circle. **Symbol:**  $\odot$



**RADIUS**



**CHORD**



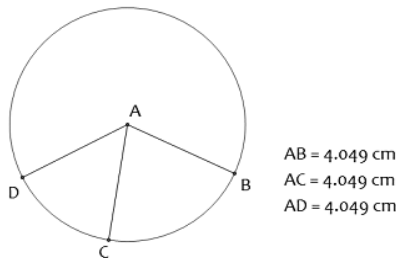
**DIAMETER**

**Radius** – a segment whose endpoints are the center of the circle and a point on the circle.

**Chord** – a segment whose endpoints are on the circle.

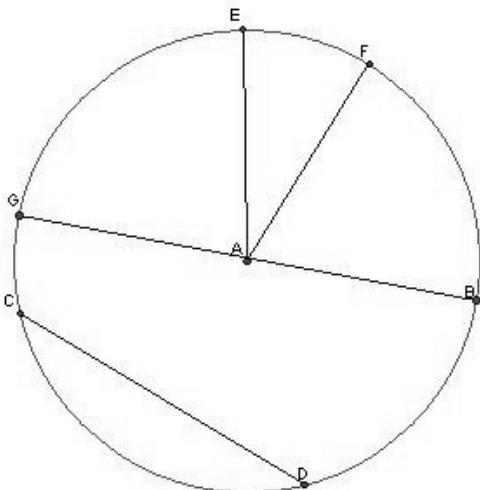
**Diameter** – a chord that contains the center.

**THEOREM 11.1** – All radii of a circle are congruent.  $\overline{AB} \cong \overline{AC} \cong \overline{AD}$



**THEOREM 11.2** – The measure of the diameter  $d$  of a circle is twice the measure of the radius  $r$  of the circle.

**Example:**



**True or False?**

$\overline{GB}$  is a chord of  $\odot A$ . \_\_\_\_\_

$\overline{GB}$  is the diameter of  $\odot A$ . \_\_\_\_\_

$\overline{CD}$  is the radius of  $\odot A$ . \_\_\_\_\_

$\overline{AE}$  is the radius of  $\odot A$ . \_\_\_\_\_

$\overline{AF}$  is the radius of  $\odot A$ . \_\_\_\_\_

**HW: P.456 #2-30 EVEN**

## 11.2 – Arcs and Central Angles

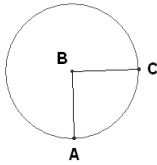
**Central Angle** – formed when the two sides of an angle meet at the center of a circle.

**Arc** – set of points along a circle defined by a central angle.

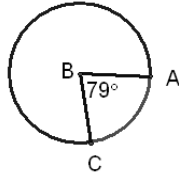
**Minor Arc** – part of the circle in the interior of the central angle with measure less than  $180^\circ$ .

**Major Arc** – part of the circle in the exterior of the central angle.

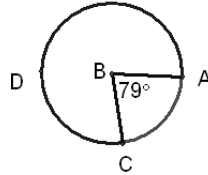
**Semicircle** – congruent arcs whose endpoints lie on a diameter of the circle.



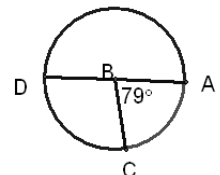
**CENTRAL ANGLE**



**MINOR ARC AC**



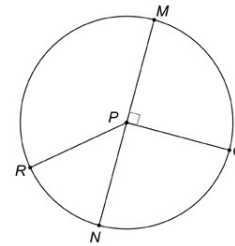
**MAJOR ARC ADC**



**SEMICIRCLE AD**

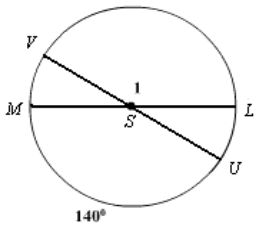
### Arc Measure:

|            |                                    |
|------------|------------------------------------|
| Minor Arc  | Minor Arc = Central Angle          |
| Major Arc  | $360^\circ - \text{Central Angle}$ |
| Semicircle | $180^\circ$                        |



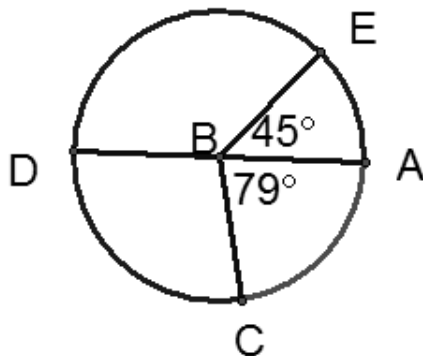
**Adjacent Arcs** – arcs of a circle with one point in common.

$$mRN + mNQ = mRNQ$$



**THEOREM 11.3** – Two minor arcs are congruent if and only if their corresponding central angles are congruent.

**Example:** Find each measure.



$$m\angle DBE \underline{\hspace{2cm}}$$

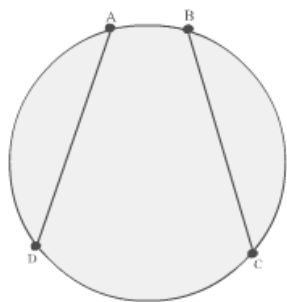
$$m\angle DBC \underline{\hspace{2cm}}$$

$$m\angle EBC \underline{\hspace{2cm}}$$

$$m\angle EDC \underline{\hspace{2cm}}$$

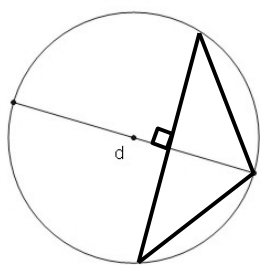
### 11.3 – Arcs and Chords

**Theorem 11.4** – Two minor arcs are congruent if and only if their corresponding chords are congruent.



$\overline{AD} \cong \overline{BC}$  if and only if  $\overline{AD} \cong \overline{BC}$

**Theorem 11.5** – In a circle, a diameter bisects a chord and its arc if and only if it is perpendicular to the chord.



**Example:**

